IN THE CLAIMS

1-15 (Canceled)

16. (Currently amended) A catalyst structure comprising a porous structure ~~support~~ and a porous interfacial layer disposed on the porous structure, wherein the porous structure has a first pore size of at least 0.1 μm, wherein the porous interfacial layer has a second pore size less than the first pore size;

wherein the catalyst structure has a porosity of greater than 30%;

wherein the porous structure comprises a foam, felt, wad or ~~combination~~ combinations thereof;

wherein the catalyst structure has performance such that when the catalyst structure is heated to at least 200°C while a feed stream comprising CO and H_2 is passed through the catalyst structure with a residence time of less than five seconds, a product stream is obtained that exhibits the properties of at least a 25% conversion of carbon monoxide and at most 25% selectivity toward methane.

17. (Currently amended) The catalyst structure of claim 16 wherein the porous structure ~~support~~ is metal;

wherein the first pore size ranges from 10 μm to 300 μm; and

wherein the interfacial layer has a thickness less than 20 μm.

18. (Previously presented) The catalyst structure of claim 16 comprising a Fischer-Tropsch catalyst selected from the group consisting of cobalt, ruthenium, osmium, and combinations thereof.

19. (Previously presented) The catalyst structure of claim 18 wherein the interfacial layer has a thickness less than 50 μm.

20. (Previously presented) The catalyst structure of claim 19 wherein the porous support is metal.

21. (Previously presented) The catalyst structure of claim 20 wherein the porous metal support is coated with a ceramic layer by chemical vapor deposition.

22. (Currently amended) The catalyst structure of claim 20 further comprising a continuous buffer layer disposed between the porous structure ~~support~~ and the interfacial layer.

23. (Previously presented) The catalyst structure of claim 19 wherein the porous structure comprises a metal foam having pores that range from 20 pores per inch to 1000 pores per inch.

24. (Previously presented) The catalyst structure of claim 20 wherein the interfacial layer comprises an oxide selected from the group consisting of: γ-Al_2O_3, SiO_2, ZrO_2, TiO_2, magnesium oxide, vanadium oxide, chromium oxide, manganese oxide, iron oxide, nickel oxide, cobalt oxide,

copper oxide, zinc oxide, molybdenum oxide, tin oxide, calcium oxide, aluminum oxide, lanthanum series oxide(s), zeolite(s), and combinations thereof.

25. (Previously presented) The catalyst structure of claim 22 wherein the buffer layer comprises Al_2O_3, SiO_2, ZrO_2, or TiO_2.

26. (Currently amended) A catalyst structure comprising a porous structure ~~support~~ and a porous interfacial layer disposed on the porous structure, wherein the porous structure has a first pore size of at least 0.1 μm, wherein the porous interfacial layer has a second pore size less than the first pore size;

wherein the catalyst structure has a porosity of greater than 30%;

wherein the porous structure comprises a foam, felt, wad or combination thereof;

wherein the catalyst structure has performance such that when the catalyst structure is placed in a reaction chamber having dimensions (about 35 mm length, 1.5 mm height, and 8 mm width) and heated to 245°C while a feed stream consisting of CO and H_2 in a H_2/CO ratio of 3, at 23 atm, is passed through the catalyst structure with a residence time of one second, a product stream is obtained that exhibits the properties of at least a 25% conversion of carbon monoxide and at most 25% selectivity toward methane.

27. (Previously presented) The catalyst structure of claim 26 wherein the first pore size ranges from 10 μm to 300 μm; and

wherein the interfacial layer has a thickness less than 20 μm.

28. (Previously presented) The catalyst structure of claim 26 comprising a Fischer-Tropsch catalyst selected from the group consisting of cobalt, ruthenium, osmium, and combinations thereof.

29. (Previously presented) The catalyst structure of claim 26 wherein the interfacial layer comprises alumina.

30. (Previously presented) The catalyst structure of claim 29 wherein the catalyst comprises Co and Ru.

31. (Previously presented) The catalyst structure of claim 26 wherein the catalyst structure has performance such that when the catalyst structure is placed in a reaction chamber having dimensions (about 35 mm length, 1.5 mm height, and 8 mm width) and heated to 265°C while a feed stream consisting of CO and H_2 in a H_2/CO ratio of 3 is passed through the catalyst structure with a pressure corrected residence time of 12.5 seconds, a product stream is obtained that exhibits a lower selectivity toward methane at 5 atm than at 23 atm.

32. (Previously presented) The catalyst structure of claim 28 wherein the catalyst structure has performance such that when the catalyst structure is placed in a reaction chamber having dimensions (about 35 mm length, 1.5 mm height, and 8 mm width) and heated to 264°C while a feed stream

consisting of CO and H_2 in a H_2/CO ratio of 3, at 23 atm, is passed through the catalyst structure with a residence time of one second, a product stream is obtained that exhibits the properties of at least a 40% conversion of carbon monoxide and at most 25% selectivity toward methane.

33. (Previously presented) The catalyst structure of claim 29 wherein the porous structure comprises a metal foam having pores that range from 20 pores per inch to 1000 pores per inch.

34. (Previously presented) The catalyst structure of claim 28 wherein the catalyst structure has performance such that when the catalyst structure is placed in a reaction chamber having dimensions (about 35 mm length, 1.5 mm height, and 8 mm width) and heated to 275°C while a feed stream consisting of CO and H_2 in a H_2/CO ratio of 3 is passed through the catalyst structure, at 23 atm, with a residence time of two seconds, a product stream is obtained that exhibits the properties of at least a 80% conversion of carbon monoxide and at most 10% selectivity toward methane.

35. (Previously presented) The catalyst structure of claim 32 wherein the porous structure comprises a metal.

36. (Previously presented) The catalyst structure of claim 32 wherein the first pore size ranges from 10 μm to 300 μm; and

wherein the interfacial layer has a thickness less than 20 μm.

37. (Previously presented) The catalyst structure of claim 36 comprising a Fischer-Tropsch catalyst selected from the group consisting of cobalt, ruthenium, osmium, and combinations thereof.

38. (Previously presented) The catalyst structure of claim 31 wherein the interfacial layer comprises alumina.

39. (Previously presented) The catalyst structure of claim 38 wherein the catalyst comprises Co and Ru.